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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,014	11/17/2003	Masataka Shinoda	245426US6	9739

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EXAMINER	
NGUYEN, LINH THI	
ART UNIT	**PAPER NUMBER**
2627	

NOTIFICATION DATE	DELIVERY MODE
02/12/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Advisory Action Before the Filing of an Appeal Brief	Application No. 10/713,014	Applicant(s) SHINODA, MASATAKA	
	Examiner Linh T. Nguyen	Art Unit 2627	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 24 January 2008 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *1,3,4,6-8 and 10-13*.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER

Continuation of 11. does NOT place the application in condition for allowance because: Applicant argues that Takeshi, Nuss and Pakdaman do not disclose "the optical lens comprise of SiC single crystal." However, Applicant acknowledge that Takeshi discloses an optical element material made of SiC (page 7, lines 11-14), therefore, the characteristic of silicon structure is a single crystal as can be found in the Wikipedia encyclopedia under "Notable Characteristics." A copy of the search in the Wikipedia encyclopedia is attached to the Advisory Action.

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER

Silicon

From Wikipedia, the free encyclopedia

14	aluminium ← silicon → phosphorus
C ↓ **Si** ↓ Ge	Periodic table - Extended periodic table

Silicon (pronounced /ˈsɪlɪkən/ or /ˈsɪlɪkɒn/, Latin: *silicium*) is the chemical element that has the symbol Si and atomic number 14. A tetravalent metalloid, silicon is less reactive than its chemical analog carbon. As the eighth most common element in the universe by mass, silicon occasionally

General	
Name, symbol, number	silicon, Si, 14
Chemical series	metalloids
Group, period, block	14, 3, p
Appearance	As broken ingot: crystalline with dark reflective bluish-tinged faces 
Standard atomic weight	28.0855(3) g·mol^{-1}
Electron configuration	[Ne] 3s^2 3p^2
Electrons per shell	2, 8, 4
Physical properties	
Phase	solid
Density (near r.t.)	2.33 g·cm^{-3}
Liquid density at m.p.	2.57 g·cm^{-3}
Melting point	1687 K (1420 °C, 2577 °F)
Boiling point	3538 K (2355 °C, 5909 °F)
Heat of fusion	50.21 kJ·mol^{-1}
Heat of	359 kJ·mol^{-1}

Vaporization	
Heat capacity	(25 °C) 19.789 J·mol^{-1}·K^{-1}

Vapor pressure

P/Pa	1	10	100	1 k	10 k	100 k
at *T*/K	1908	2102	2339	2636	3021	3537

Atomic properties

Crystal structure	Diamond cubic
Oxidation states	4, 3 [2] (http://www.webelements.com/webelements/compounds/text/Si/H6Si2-1590870.html), 2 [3] (http://ptcl.chem.ox.ac.uk/MSDS/SI/silicon_II_oxide.html), 1 [4] (http://bernath.uwaterloo.ca/media/184.pdf) (amphoteric oxide)
Electronegativity	1.90 (Pauling scale)
Ionization energies (more)	1st: 786.5 kJ·mol^{-1}
	2nd: 1577.1 kJ·mol^{-1}
	3rd: 3231.6 kJ·mol^{-1}
Atomic radius	117.6 pm
Atomic radius (calc.)	111 pm
Covalent radius	111 pm
Van der Waals radius	210 pm

Miscellaneous

Magnetic ordering	nonmagnetic
Thermal conductivity	(300 K) 149 W·m^{-1}·K^{-1}
Thermal expansion	(25 °C) 2.6 µm·m^{-1}·K^{-1}
Speed of sound (thin rod)	(20 °C) 8433 m/s
Young's modulus	150 GPa
Bulk modulus	100 GPa
Mohs hardness	6.5
CAS registry number	7440-21-3
Band gap energy at 300 K	1.12 eV

Selected isotopes

occurs as the pure free element in nature, but is more widely distributed in dusts, planetoids and planets, as various forms of silicon dioxide or silicate. On Earth, silicon is the second most abundant element (after oxygen) in the crust, making up 25.7% of the crust by

iso	NA	half-life	DM	DE (MeV)	DP
^{28}Si	92.23%	Si is stable with 14 neutrons			
^{29}Si	4.67%	Si is stable with 15 neutrons			
^{30}Si	3.1%	Si is stable with 16 neutrons			
^{32}Si	syn	170 y	β^-	13.020	^{32}P
References					

mass. Silicon has many industrial uses. Elemental silicon is the principal component of most semiconductor devices, most importantly integrated circuits or *microchips*. Silicon is widely used in semiconductors because it remains a semiconductor at higher temperatures than the semiconductor germanium and because its native oxide is easily grown in a furnace and forms a better semiconductor/dielectric interface than almost all other material combinations.

In the form of silica and silicates, silicon forms useful glasses, cements, and ceramics. It is also a component of silicones, a class-name for various synthetic plastic substances made of silicon, oxygen, carbon and hydrogen, often confused with silicon itself.

Silicon is an essential element in biology, although only tiny traces of it appear to be required by animals. It is much more important to the metabolism of plants, particularly many grasses, and silicic acid (a type of silica) forms the basis of the striking array of protective shells of the microscopic diatoms.

Contents

Notable characteristics

The outer electron orbitals (half filled subshell holding up to eight electrons) have the same structure as in carbon and the two elements are very similar chemically. Even though it is a relatively inert element, silicon still reacts with halogens and dilute alkalis, but most acids (except for some hyper-reactive combinations of nitric acid and hydrofluoric acid) do not affect it. Having four bonding electrons however gives it, like carbon, many opportunities to combine with other elements or compounds under the right circumstances.

Both silicon and carbon are semiconductors, readily either donating or sharing their four outer electrons allowing many different forms of chemical bonding. Pure silicon has a negative temperature coefficient of resistance, since the number of free charge carriers increases with temperature. The electrical resistance of single crystal silicon significantly changes under the application of mechanical stress due to the piezoresistive effect.

In its crystalline form, pure silicon has a gray color and a metallic luster. It is similar to glass in that it is rather strong, very brittle, and prone to chipping.

Occurrence

Measured by mass, silicon makes up 25.7% of the Earth's crust and is the second most abundant element on Earth, after oxygen. Pure silicon crystals are only occasionally found in nature; they can be found as inclusions with gold and in volcanic exhalations. Silicon is usually found in the form of silicon dioxide (also known as silica), and silicate.

Silica occurs in minerals consisting of (practically) pure silicon dioxide in different crystalline forms. Sand, amethyst, agate, quartz, rock crystal, chalcedony, flint, jasper, and opal are some of the forms in which silicon dioxide appears. (They are known as "lithogenic", as opposed to "biogenic", silicas.)

Silicon also occurs as silicates (various minerals containing silicon, oxygen and one or another metal), for example feldspar. These minerals occur in clay, sand and various types of rock such as granite and sandstone. Asbestos, feldspar, clay, hornblende, and mica are a few of the many silicate minerals.

Silicon is a principal component of aerolites, which are a class of meteoroids, and also is a component of tektites, which are a natural form of glass.

See also Category:Silicate minerals

Isotopes

Silicon has numerous known isotopes, with mass numbers ranging from 22 to 44. ^{28}Si (the most abundant isotope, at 92.23%), ^{29}Si (4.67%), and ^{30}Si (3.1%) are stable; ^{32}Si is a radioactive isotope produced by argon decay. Its half-life has been determined to be approximately 170 years (0.21 MeV), and it decays by beta - emission to ^{32}P (which has a 14.28 day half-life [5] (http://sciencegateway.org/isotope/phosp32.html)) and then to ^{32}S.